

DEVELOPMENT OF LACTOSE-FREE PROBIOTIC YOGURT THROUGH FERMENTATION AND ADDITION OF LACTASE IN PARTNERSHIP WITH A FAMILY FARMING COOPERATIVE IN WEST PARANÁ FOR SCHOOLCHILDREN

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Intolerance is characterized by the body's inability to hydrolyze lactose from milk and its derivatives due to the absence or reduced amount of lactase enzyme in the intestine, which can lead to diarrhea, excessive gas production, pain due to abdominal distension, flatulence, nausea and vomiting. This problem can affect different age groups and is especially complicated in children. The objective of this work was to develop a lactose-free probiotic natural yogurt, through conventional fermentation and addition of lactase, aimed at children attending public schools in a municipality in the west of Paraná, a project that is part of a partnership between UNIOESTE and a cooperative of family farmers in the region (COOPLAF). The yogurt was made using whole milk, two probiotic commercial lactic acid cultures (*L.bulgaricus* with *S.thermophilus* and *L.acidophilus*) and acid lactase, with 13% sucrose added and without added starches, colorings or preservatives. From these ingredients, three treatments were planned with addition of the enzyme at different times of manufacture: (T1) addition of lactase at 42°C with incubation for 4h followed by addition of lactic acid cultures with incubation for 4h and cooling at 10°C; (T2) addition of lactase together with the lactic acid cultures at 42°C for 4h and subsequent cooling to 10°C; (T3) addition of lactic acid cultures and incubation at 42°C followed by cooling at 10°C for 4h and addition of lactase with maintenance of the enzyme for 20h at the same refrigeration temperature (04 repetitions). The control yogurt was added from the same lactic acid cultures without the addition of lactase, incubated at 42°C for 4 hours and then refrigerated at 10°C. The products obtained were subjected to compositional and physical-chemical analyses, according to methodologies described in Brazilian Legislation. Compositional analyzes of moisture, ESD, total fat, total proteins, total carbohydrates, lactose and the physical-chemical properties of titratable acidity, pH and viscosity were carried out. The analyzes were carried out in duplicates and compared to Brazilian Legislation standards for fermented milks. The lactose content was determined using an enzymatic spectrophotometric method. The results obtained were submitted to ANOVA and when a significant difference was detected at a 5% probability level, the Tukey test was applied. Treatment 1 was the one that showed the best results, achieving total lactose hydrolysis, with an average composition of 80.95% moisture (± 4.39); 19.05% ESD (± 4.39); 3% total fat (± 0.31); 3.15% total

proteins (± 0.25), 12.99% total carbohydrates in sucrose (± 5.31) and 0% lactose and average physicochemical properties of 0.67% lactic acid as acidity titratable (± 0.06); 4.40 pH (± 0.15) and 387.5cP viscosity (± 21.65), all complying with legislation. Under the conditions studied in this work, it was concluded that it was possible to produce a lactose-free full-fat natural probiotic yogurt that could contribute positively to the human intestinal health. The aim is to carry out a product sensory evaluation among schoolchildren, using the same formulation with the suppression of the addition of sucrose, looking for a natural ingredient as a sweetener, which will make the product even healthier for the target audience.

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